REMARKS

No claims have been canceled, amended or added in this paper. Therefore, claims 1-28 are pending and are under active consideration.

Claims 1-5, 8-9, 19, 24 and 26-28 stand rejected under 35 U.S.C. 102(b) "as being anticipated by Pinson (EP0359985)." In support of the rejection, the Patent Office states the following with respect to sole independent claim 1:

> As to claim 1, Pinson discloses (fig. 1, fig. 2) at least one electrical conductor formed as a single-wire or multi-wire line or cable (34), which connects devices (12, 18), subassemblies or circuit components of the piece of electrical equipment (12, 18) to one another, means (26) which guide the light that emerges when an arc (electrical power) is formed from the site of its formation to an optical/electrical transformer (62) and a monitoring and evaluating unit (20) electrically connected to the transformer (62) for evaluating the signals of transformer (62), is hereby characterized in that the means (26) which guide the light that emerges when an arc (electrical power) is formed to an optical/electrical transformer (62) involve at least one optical fiber (44) which envelopes one or more wire cores of the electrical conductor (42) and thus simultaneously forms the electrical insulation (46) of a line or the shielding of a cable (34) (column 3, lines 30-40, column 4, lines 18-36, lines 45-52).

Applicant respectfully traverses the subject rejection. Claim 1, from which claims 2-5, 8-9, 19, 24 and 26-28 depend, is patentable over Pinson for at least the reasons below.

At the outset, Applicant notes that the composite cable disclosed by Pinson is neither intended for detecting stray light arcs nor suitable for this function. Even if one assumes that the arrangement described by Pinson would be completed by a monitoring and evaluating unit (which is not disclosed by Pinson), the arrangement described in Pinson still would not be able to fulfill such a

function in a satisfactory manner. Instead, Pinson describes a composite cable consisting of an optical fiber which is embedded in an outer coating layer and is encircled with a plurality of electrical conductors, which are also embedded in said coating layer. The goal of Pinson is to have an integrated arrangement of optical and electrical transmission means in which the electrical conductors circulating the optical conductor act, to a certain extent, as reinforcement means for the optical conductor in addition to the explicit reinforcement fibers (44) embedded in the outer coating layer. By contrast, in the present invention, one or more electrical conductors are enveloped by an optical fiber. However, this arrangement in the present invention is not arbitrary nor is it invertible in the sense that it could be comparable with the composite cable of Pinson because, otherwise, it could not be used to detect stray light arcs, as will be discussed further below. Furthermore, the optical fiber enveloping the electrical conductors with respect to the present invention forms the insulation for the electrical conductors. This is not the case in Pinson.

Because, in the present invention, the electrical conductors are enveloped by the optical fiber, the light of possible stray light arcs is directly coupled on the inside of the optical fiber (see, for example, the present specification on page 4, last paragraph). By contrast, if a stray light arc would occur at one of the electrical conductors of the arrangement of Pinson, the light of such a stray light arc would, in all likelihood, be radiated radially outwards, without the optical fiber actually registering the occurrence of a stray light arc. However, there is even a more important fact why an inner optical fiber would be improper to transmit light of a stray light arc which occurs outside of this fiber to an assumed monitoring and evaluating unit. As is known to a person of ordinary skill in

the art, an optical fiber has a core with a high refractive index which is enveloped by glass or special plastic material with a lower refractive index. One distinguishes so-called step index fibers and gradient index fibers. In any case, the refractive index in the outer range of the fiber is lower than in its inner range. This is necessary to lead the light inside the fiber by total reflection of the light or by refracting it at the outer cladding of the fiber. However, on the other hand, this is the reason it is nearly impossible to couple light from radial outside into an optical fiber. Coupling light from outside into an optical fiber is possible only across its front sides. In any case, it is impossible for low light quantities which are contingently coupled into the fiber across its cladding to valuate so that this would give the possibility of proper detection of stray light arcs which occur in one of the electrical conductors circulating the optical fiber of the arrangement of Pinson. Pinson also gives no consideration to the fact that the optical fiber of the described arrangement could be conditioned in a manner allowing coupling light from the radial outer side into the fiber.

Last, but not least, as already mentioned above, the arrangement of Pinson lacks a monitoring and evaluating unit which could valuate the light of possible stray light arcs and possibly drive means for disconnecting the current through an electrical conductor affected by such a stray light arc. Moreover, Pinson does not contain any consideration of such a monitoring and evaluating unit. With respect to this, the question arises as to why a person of ordinary skill in the art, knowing about the refractive relations of an optical fiber and about the difficulties of coupling light from radial outside into an optical fiber, would have considered complementing the arrangement of Pinson with a unit

for detecting stray light arcs possibly occurring in electrical conductors (42) circulating the optical fiber (36, 38).

In conclusion, Applicant notes that the claimed invention differs from Pinson in at least the following respects: First, whereas, in the present invention, an optical fiber envelops electrical conductor(s), Pinson discloses an optical fiber encircled by electrical conductors. Second, whereas, in the present invention, light of a possible stray light arc is directly coupled to the inside of the optical fiber, Pinson discloses an arrangement in which light may be/should be coupled advantageously into the optical fiber only across its front sides. Third, whereas, in the present invention, an optical fiber serves to transmit light (e.g., of a stray light arc occurring inside the optical fiber) and to insulate the enveloped electrical conductors simultaneously, Pinson discloses the optical fiber serving only for transmission of light (more precisely, of light coupled across a front side of the fiber in any case). Fourth, whereas, in the present invention, part of the arrangement is a monitoring and evaluating unit, Pinson lacks a monitoring and evaluating unit, as well as any advice to account for such a unit. Moreover, an adequate unit would make no sense for detecting stray light arcs occurring in the electrical conductors circulating the optical fiber of Pinson because of the impossibility to couple light with enough quantity from radially outside into the optical fiber for proper evaluation.

Accordingly, for at least the above reasons, the subject rejection should be withdrawn.

Claim 6 stands rejected under 35 U.S.C. 103(a) "as being unpatentable over Pinson (EP035985) in view of Di-Vita (4,134,639)." In support of the rejection, the Patent Office states the following:

> As to claim 6, Pinson discloses (fig. 2) core (36) to define the inner part of the fiber, and outer cover (38) to define the outer cladding of the fiber (column 4, lines 25-29). Pinson is silent to explicitly disclose that the inner surface of the additional outer cladding is structured in an optically reflecting manner and light reflecting foil. Di-Vita discloses light guides with internally reflecting boundaries (i.e. fibers or foils) between which a transparent body of graded refractive index is interposed (Abstract, column 1, lines 11-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Di Vita to use fiber with internally reflecting foils as a means of transmitting and reflecting light within the inner fiber core resulting in improving the detection of the transmission of arcs or sparks within the device.

Applicant respectfully traverses the subject rejection. Claim 6 depends from claim 1. Claim 1 is patentable over Pinson for at least the reasons given above. Di-Vita fails to cure all of the deficiencies of Pinson with respect to claim 1. Therefore, based at least on its dependency from claim 1, claim 6 is patentable over the applied combination of Pinson and Di-Vita.

Accordingly, for at least the above reasons, the subject rejection should be withdrawn.

Claims 10-13 stand rejected under 35 U.S.C. 103(a) "as being unpatentable over Pinson (EP035985) in view of Stenerhag et al (4,464,700)." In support of the rejection, the Patent Office states the following:

> As to claim 10, Pinson discloses (fig. 2) an optical fiber (44), and an electrical insulation (46) (column 4, lines 44-52). Pinson is silent to explicitly disclose the optical fiber function simultaneously as insulation or shielding consists of polymer. Polymers are well

known in the art for the formation of optical fibers and insulation material. Stenerhag et al discloses (fig. 6) that the outer insulation (42) comprises a mat of fibers of a polymer such as polyethylene or polypropylene (column 7, lines 19-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Stenerhag et al to use any type of polymer properties as claimed in order to form a durable optical fiber resulting in insulation used to encase conductive wirings.

As to claims 11-13, Pinson discloses (fig. 1, fig. 2) optical fiber (26, 44) (column 4, lines 21-28). Pinson is silent to explicitly disclose that optical fibers consist of polymethyl methacrylate, polymethylpentene and polycarbonate. Polymers are well known in the art for the formation of optical fibers. Stenerhag et al discloses (fig. 6) that the outer insulation (42) comprises a mat of fibers of a polymer such as polyethylene or polypropylene (column 7, lines 19-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Stenerhag to use any type of polymer properties as claimed in order to form a durable optical fiber resulting in insulation used to encase conductive wirings.

Applicant respectfully traverses the subject rejection. Claims 10-13 depend from claim 1. Claim 1 is patentable over Pinson for at least the reasons given above. Stenerhag et al. fails to cure all of the deficiencies of Pinson with respect to claim 1. Therefore, based at least on their respective dependencies from claim 1, claims 10-13 are patentable over the applied combination of Pinson and Stenerhag et al.

Accordingly, for at least the above reasons, the subject rejection should be withdrawn.

Claim 14 stands rejected under 35 U.S.C. 103(a) "as being unpatentable over Pinson (EP035985) in view of Ostromek et al (US2005/0094270)." In support of the rejection, the Patent Office states the following:

As to claim 14, Pinson discloses (fig. 1) an optical/electrical transformer (62) (column 1, lines). Pinson is silent to explicitly disclose that filters are used for suppressing the effect of extraneous light. Ostromek et al disclose (fig. 1) an optical transformer (30a, 30b) may comprise any device operable to perform an optical transform of light, for example, a lens, a filter, or an electro-optical element (paragraph [0013]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Ostromek et al to include the filter in an optical transformer in order to allow selective light to pass and suppress or block out extraneous light resulting in improving the performance of the device.

Applicant respectfully traverses the subject rejection. Claim 14 depends from claim 1. Claim 1 is patentable over Pinson for at least the reasons given above. Ostromek et al. fails to cure all of the deficiencies of Pinson with respect to claim 1. Therefore, based at least on its dependency from claim 1, claim 14 is patentable over the applied combination of Pinson and Ostromek et al.

Accordingly, for at least the above reasons, the subject rejection should be withdrawn.

Claims 16-17 stand rejected under 35 U.S.C. 103(a) "as being unpatentable over Pinson (EP0359985)." In support of the rejection, the Patent Office states the following:

> As to claim 16, Pinson discloses that the optical/electrical transformer (62) can be connected onto an axial end of the optical fiber (26) via a breakaway electrical connector (60) as illustrated in fig. 1 (column 5, lines 54-56). Pinson is silent to explicitly disclose that the optical/electrical transformer can be screwed on. It is well known in the art that connecting, clamping or attaching components to each other is functionally equivalent or serve the same purpose of screwing on components to each other respectively in that a means for connecting the components is developed or formed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the connecting structure as taught by Pinson as a means to attach or screw the optical fiber to the optical/electrical transformer via the breakaway connector in order to

improve the accurate detection of an arc or spark resulting in shutting down the device to avoid system damage.

As to claim 17, Pinson discloses (fig 1) that the optical/electrical transformer (62) is connected in the optical fiber via the breakaway electrical connector (60) (column 5, lines 53-56). Pinson is silent to explicitly disclose the optical/electrical transformer is sealed. It is well known in the art that connecting, clamping or attaching components to each other is functionally equivalent or serve the same purpose of sealing components to each other respectively in that a means for connecting the components is developed or formed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the connecting structure as taught by Pinson as a means to attach or seal the optical fiber to the optical/electrical transformer via the breakaway connector in order to improve the accurate detection of an arc or spark resulting in shutting down the device to avoid system damage.

Applicant respectfully traverses the subject rejection. Claims 16 and 17 depend from claim 1. Claim 1 is patentable over Pinson for at least the reasons given above. Therefore, based at least on their respective dependencies from claim 1, claims 16 and 17 are patentable over Pinson.

Accordingly, for at least the above reasons, the subject rejection should be withdrawn.

Claim 18 stands rejected under 35 U.S.C. 103(a) "as being unpatentable over Pinson (EP0359985) in view of Kurz et al (4,424,147)." In support of the rejection, the Patent Office states the following:

As to claim 18, Pinson discloses (fig. 1) an optical fiber (44), and an optical/electrical transformer (60) (column 4, lines 44-52). Pinson is silent to explicitly disclose the optical/electrical transformer consist of polymer. Polymers are well known in the art for the formation of transformers. Kurz et al disclose that conductors in transformers are often insulated with polymers such as parylene (column 1, lines 38-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Kurz et al to use the polymer in order to construct

> an optical/electrical transformer resulting in improving the durability of the transformer.

Applicant respectfully traverses the subject rejection. Claim 18 depends from claim 1. Claim 1 is patentable over Pinson for at least the reasons given above. Kurz et al. fails to cure all of the deficiencies of Pinson with respect to claim 1. Therefore, based at least on its dependency from claim 1, claim 18 is patentable over the applied combination of Pinson and Kurz et al.

Accordingly, for at least the above reasons, the subject rejection should be withdrawn.

Claim 23 stands rejected under 35 U.S.C. 103(a) "as being unpatentable over Pinson (EP0359985) in view of Baker (3,618,526)." In support of the rejection, the Patent Office states the following:

> As to claim 23, Pinson discloses (fig. 1) optical fibers with long line lengths (column 4, lines 5-7). Pinson is silent to explicitly disclose light intensifiers. Baker discloses (fig. 1) fiber-optic light intensifier (19) consisting of a plurality of tapered optical fibers (column 2, lines 50-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Baker to incorporate the fiber-optic light intensifier in order to reduce the impinging coherent light beam and increase the output of radiant energy intensity per unit area resulting in improving the performance of the device (column 2, lines 52-54).

Applicant respectfully traverses the subject rejection. Claim 23 depends from claim 1. Claim 1 is patentable over Pinson for at least the reasons given above. Baker fails to cure all of the deficiencies of Pinson with respect to claim 1. Therefore, based at least on its dependency from claim 1, claim 23 is patentable over the applied combination of Pinson and Baker.

Accordingly, for at least the above reasons, the subject rejection should be withdrawn.

Claims 7, 15, 20-22 and 25 stand objected to "as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims."

Applicants respectfully traverse the subject objection. The subject objection is based on the premise that claim 1, from which claims 7, 15, 20-22 and 25 depend, is unpatentable over the art of record. However, as Applicants have explained above, this premise is in error. Therefore, the subject objection is in error and should be withdrawn.

In conclusion, it is respectfully submitted that the present application is in condition for allowance. Prompt and favorable action is earnestly solicited.

If there are any fees due in connection with the filing of this paper that are not accounted for, the Examiner is authorized to charge the fees to our Deposit Account No. 11-1755. If a fee is

required for an extension of time under 37 C.F.R. 1.136 that is not accounted for already, such an extension of time is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on January 15, 2010.

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